

REMARKS/ARGUMENTS

Claims 1, 27 and 46 have been amended to include subject matter previously recited in claims 40 and 44. Consequently, claims 40 and 44 have been cancelled without prejudice. No new matter has been added.

Rejections Under 35 U.S.C. § 102

Claims 1, 3, 27, 40, 42, 44 and 46 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 4,621,927 (hereinafter Hiroi).

Each independent claim 1, 27, and 46 has been amended to overcome this rejection and, as now presented, patentably distinguishes over Hiroi. Specifically, each claim has been amended to more clearly recite that embodiments of Applicants' invention are directed to a method and apparatus that regulates a supply or flow rate of each of a first material and a second material, responsive to changes in concentration of one of the first and second materials, to provide a blend of the first and second materials having a predetermined flow rate and a predetermined composition of the first and second materials.

Hiroi describes that one of the drawbacks of the conventional mixture control apparatus illustrated in Fig. 1 of Hiroi is that the flow rate of one of the fluids being mixed is controlled in accordance with the flow rate of the other. (Hiroi, column 2, lines 55-57.) For this reason, Hiroi notes that the set point variable signal F_s cannot accurately determine a transient change in the flow rate F_c (i.e., the "load flow rate") of the third (i.e., blended) fluid C, and that when the flow rate F_c of the blended output fluid C changes, the setpoint variable signal F_s cannot accurately be calculated. (Hiroi, column 2, lines 59-62.)

To overcome this drawback, Hiroi provides a mixture control apparatus in which "the mixing flow rates of the first and second fluids are calculated in accordance with the flow rate (load flow rate) of the third fluid" (i.e., the blended output fluid C). (Hiroi, column 3, lines 62-65.) For this reason, Hiroi states that the mixing quantities of the first and second fluids can be accurately controlled "in accordance with changes in load flow rate" (i.e., with changes in the flow rate F_c of the blended output fluid C). (Hiroi, column 3, lines 65-68.).

In both the description of the prior art of Fig. 1, and in the description of preferred embodiments of his invention, Hiroi repeatedly emphasizes that the flow rate F_c of the blended output fluid changes. (See Hiroi, column 2, lines 55-64; column 3, lines 23-26 and

lines 62-68; and column 7, lines 44-50.) Thus, although Hiroi discloses controlling a flow rate of a first and second fluid to achieve a desired blend of the first and second fluids, nowhere does Hiroi disclose, teach, or suggest also controlling the flow rate of the output blend as now recited in each of applicant's independent claims. Indeed, quite the opposite, Hiroi states that the flow rate of the output fluid changes (in both the prior art and his various embodiments).

For example, unlike the disclosure of Hiroi, the present invention, as recited in independent claims 1 and 46, adjusts a flow rate (or amount) of the first material and a flow rate (or amount) of a second material to provide a blend having a predetermined composition of the first and second materials and to maintain a predetermined flow rate of the blend, in response to variations in a concentration of at least one of the first and second materials. Similarly, the method of claim 27 regulates the supply of each of the first and second process materials and maintains, responsive to variations in concentration in at least one of the first and second process materials, a substantially constant flow rate of the blend of the first and second process materials having the predetermined composition. As such, independent claims 1, 27, and 46 patentably distinguish over Hiroi. Claims 3 and 42 depend directly or indirectly from claim 1, and patentably distinguish over Hiroi for at least the above mentioned reasons. Claims 40 and 44 have been cancelled without prejudice. Withdrawal of this rejection is, therefore, respectfully requested.

Rejections Under 35 U.S. C. § 103

Claims 43 and 45 were rejected under 35 U.S. C. § 103(a) as obvious over Hiroi. This rejection is respectfully traversed.

Claims 43 and 45 depend directly from independent claims 1 and 27, respectively, and necessarily contain each and every element of the claims from which they depend. As noted above, independent claims 1 and 27 are patentable over Hiroi, and as such claims 43 and 45 are patentable for at least the same reasons. Withdrawal of this rejection is respectfully requested.

Claims 41 and 47 were rejected under 35 U.S. C. § 103(a) as obvious over Hiroi in view of U.S. Patent No. 4,964,732 (hereinafter Cadeo). This rejection is respectfully traversed.

Claims 41 and 47 depend directly from independent claims 1 and 46, respectively, and necessarily contain each and every element of the claims from which they depend. As noted above, independent claims 1 and 46 are patentable over Hiroi. The static mixer of Cadeo fails to cure the deficiencies of Hiroi, and as such, claims 41 and 47 are patentable over Hiroi and Cadeo, either alone or in combination. Withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by the enclosed check, please charge any deficiency to Deposit Account No. 502762.

Respectfully submitted,
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